



Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Compressors/Engines ☒
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Automate Systems Operation to Reduce Venting

Applicable sector(s):

☐ Production ☐ Processing ☒ Transmission and Distribution

Partners reporting this PRO: Louisville Gas and Electric Company, Natural Gas Pipeline Co.

Other related PROs: Install Electric Compressors, Replace Ignition-Reduce False Starts

Technology/Practice Overview

Description

Transmission pipelines have multiple compressor stations with five to ten compressors at each station. Where these compressors have older ignition systems, shutdowns and re-starts result in blowdown and gas pneumatic starter emissions that release excessive amounts of methane to the atmosphere. Partners reported reducing these emissions by automating reciprocating compressors.

Automating control systems, such as the compressor ignition systems, reduces the number of start-ups and shutdowns. Automatic control systems, like Programmable Logistic Controllers (PLC), incorporate features such as unit performance, process calculations, unit load management, independent safety shutdown, and automated backup control. These systems effectively increase the operation efficiency and reliability of the compressor and also reduce methane emissions.

Principal Benefits

Reducing methane emissions was:

☐ The primary benefit of the project ☒ An associated benefit of the project

Operating Requirements

An electrical power supply is required to operate the automatic systems.

Applicability:

This option is applicable to all electrified transmission stations.

Methane Savings

20 Mcf/yr

Costs

Capital Costs (including installation)

☐ < \$1,000 ☒ \$1,000-\$10,000 ☐ > \$10,000

Operating and Maintenance Costs (Annual)

☐ < \$100 ☒ \$100-\$1,000 ☐ > \$1,000

Payback (Years)

☒ 0-1 ☐ 1-3 ☐ 3-10 ☐ > 10

Methane Emission Reductions

The methane emission savings are based on one transmission compressor blowdown of 15 Mcf per year plus gas vented from a pneumatic starting motor. Based on the handbook "Pipeline Rules of Thumb" (Sixth Edition, p. 24-15) 0.5 cf of gas per hp at 250 psig has to be stored to operate the starting motor. Assuming three attempts for a successful startup, methane emissions from these attempts would be 4.50 Mcf/yr. One partner reported methane savings of 11,092 Mcf/yr over 3 years for multiple applications.

Economic Analysis

Basis for Costs and Savings

Methane emission savings of 20 Mcf/yr are estimated for a 3,000 hp reciprocating compressor that requires three attempts to start up and one avoidable blowdown per year.

Discussion

This technology typically has a quick payback. The one-time capital costs for installing a Programmable Logistic Controller (PLC) on a reciprocating compressor is justified by the lower operation and maintenance costs rather than gas savings. PLCs reduce methane emissions by providing a better service factor and fewer compressor surges, reducing the amount of methane that is vented to the atmosphere.